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Aquilegia longissima.—Apropos of Dr. Gray's note, it may be allowable to call attention to several of our American flowers with long, slender spurs, adapted to fertilization by the aid of *Aphingidæ*. Beside the long-spurred *Aquilegiæ*, which, despite the opinions of certain English writers on floral evolution, are more highly specialized than the European species of the genus, several flowers of this description occur in the West and Southwest. In the genus *Enothera* there are not less than four such: *E. Missouriensis* (2-5'), *E. microseles* (4-5'), *E. Jamesii* (3-5½'), and *E. caespitosa* (2-7'). The flowers of *Macrosiphonia Berlandieri* are 3-5 inches long. *Mirabilis Wrightiana* reaches a length of 4½'; and *M. longiflora* 6½'; while over the line in Mexico, some of the species of *Nicotiana*, e. g. *N. longiflora*, reach a length of above three and a half inches.

These flowers require a longer proboscis than that of our common Eastern moths. Probably their most frequent visitor will be found to be *Amphonyx Antæus* Drury, one specimen of which, which was kindly examined for me by Mr. S. Henshaw, of the Boston Society of Natural History, had a tongue 5¾ inches long. It is quite probable that this length may be exceeded in other individuals.—WM. TRELEASE.

The Grasses of the U. S.—Allow me to say in response to your kind note in the last number of the GAZETTE, respecting the recent pamphlet on the Grasses of the United States, that it is somewhat experimental, and designed to call out information and criticism as well as to give needed assistance, especially to Western botanists. A few omissions have been already pointed out, as for instance, *Panicum virgatum*, L., and *Glyceria Canadensis*, Trin., also some typographical errors. There is also an omission of one genus, viz. *Scleropogon*, of which we have at least one species in Texas and the South-west, viz: *S. Karwinskianus*, Benth., which has been frequently distributed under the name of *Tricuspis monstrosa*, Munro. Any information respecting omissions, errors, or notes as to local names, uses, etc., will be thankfully received.—GEO. VASEY.

Abnormal Clematis.—I have just had handed to me by Prof. E. W. Blake, Jr., a branch of *Clematis*, probably *C. patens*, showing a peculiar abnormality. It is terminated by the usual large flower. The first foliage leaf has the petiole twisted, as usual, for climbing. Above this the leaflet, for there is but one, is expanded into a blade, about half of which is petaloid, while the rest is green. The plant was grown in New Haven.—W. W. BAILEY.

Erratum.—In my note on local names, in last issue, there occurs an *erratum*. For "mining berry" read "minnie-berry." But who ever reads a correction?—W. W. BAILEY.

EDITORIAL NOTES.

MR. BUCKLEY has just named a Texan oak for Dr. Vasey, being a shrub or small tree of the group of black oaks.

WE WOULD earnestly urge all botanists who have grievances against the Postoffice Department in reference to packages of specimens to state them very briefly to Dr. Farlow, of Cambridge, Mass., Prof. Bessey, of Ames, Iowa, or

Prof. Coulter, of Crawfordsville, Ind., who are preparing to address the authorities at Washington upon the subject.

MR. A. P. MORGAN has published the third installment of his Mycologic Flora of the Miami Valley, Ohio. The great genus *Agaricus* having been disposed of, the present pamphlet begins with *Coprinus* and ends with *Lenzites*. Two colored plates illustrate Mr. Morgan's new species, *Coprinus squamosus* and *Hygrophorus Laurei*. We also note as new *Russula incarnata*, *Marasmius fagineus*, and *M. capillaris*. Of the 96 species described, Mr. Chas. Peck is responsible for 12.

THE AMERICAN JOURNAL OF SCIENCE seems to have had only its geologist at Minneapolis, and the report of the meeting, under the head of "Miscellaneous Scientific Intelligence," might as well have been included under "Geology." The statement that the "sections which had the largest number of papers were the geological and archaeological," will not be sustained by the facts. The Geological section had 36 papers, Biology had 30, and Anthropology 25. The three papers of Prof. Cope, included in the report under the section of Geology, were referred to the section of Biology and read there.

THE TRANSLATION of Prof. Hermann Müller's "Die Befruchtung der Blumen durch Insekten," by Mr. D'Arcy Thompson, of Cambridge, England, is not only good service to the English speaking botanist who does not read German, but also to the many who do. The arrangement of the species in the translation is according to the system of Bentham & Hooker, instead of the German classification of the original. The preface is by Mr. Darwin, and is one of his last writings. The book is published by Macmillan & Co.

As we go to press we learn of the death of Dr. Müller, which occurred at Prad, in Tyrol, August 25. In him the world loses probably its chief authority in that department of natural history which deals with the mutual relations of insects and flowers. His works are vast storehouses of information, and will most probably always continue to be the principal source of information in their department. Dr. Gray says of him, in the October *Am. Jour. Sci.*, "By his most laborious and patient observations, by his great acuteness in interpretation and research, and by his studies of the modifications of insects in relation to flowers, no less than those of flowers to insects, he had placed himself at the head of this curious branch of biology, which was initiated by his countryman, Christian Conrad Sprengel, about one hundred years ago, resuscitated and more broadly based upon "the Knight-Darwin law," and the lead in which, since Darwin's death, is restored to Germany mainly by the researches of Hildebrand and Hermann Müller.

IN THE OCTOBER *Naturalist* Prof. Bessey gives the section divisions and principal synonymy of Lojaccono's Revision of the N. Am. Trifolii, as published in the April number of *Nuovo Giornale Botanico Italiano*. We notice that Dr. Gray and Mr. Watson are each honored with a new California species, both cases being varieties raised to specific rank.

IN HIRAM SIBLEY'S *Grain and Farm Seeds Manual*, Dr. E. L. Sturtevant gives interesting histories of Indian corn, wheat, oats, barley, rye, buckwheat

and potatoes, and Prof. W. J. Beal has an illustrated paper on "Grasses," intended to give farmers some knowledge of the more common grasses they are likely to meet.

IT IS WITH a sense of personal loss that we record the death of Chas. F. Parker, curator of the Philadelphia Academy of Natural Sciences, which took place September 7. Mr. Parker was a bookbinder, being in charge of the binding department of *Godey's Lady's Book*, but as a botanist he was known in every herbarium of any pretension. His fine specimens of the famous New Jersey flora were always in demand, and no one had a more intimate knowledge of that region. His last days were spent in arranging the large herbarium of the Academy, and his friends write that the results were most satisfactory. Mr. Parker was one of the men that botanists hoped to meet next summer in Philadelphia, but his work remains as an humble but characteristic memorial of him.

J. E. TAYLOR, in *Science Gossip*, records the discovery of flies carrying away upon their feet the pollen masses from *Asclepias*, and it "struck him that it might be the method in which *Asclepias* is fertilized by insects," and he thereupon "suggests to North American botanists to examine" their various species of *Asclepias*, and see if insects are entangled, and have "pollen masses adhering to them." Where has Mr. Taylor been all these years? North American botanists were quick-sighted enough to discover this long ago, and even in some of our little Western colleges for several years the classes have been watching the insects at this work, and at the same time knew that they were examining what was common knowledge to every botanist in North America.

DR. JULIUS SACHS has just published a book entitled *Vorlesungen über Pflanzenphysiologie*, which is a series of lectures upon plant physiology, discussing the subject in a less formal way than his *Lehrbuch*. In reference to the latter, which has been so generally and constantly used in the German, French and English languages, it is interesting to hear the author expressing himself as follows: "As long as the artist is pleased with his work, he can add a touch here and there, or can even go in for greater changes; but this is not sufficient when the work has ceased to be the expression of his idea, and this is the attitude I stand in with regard to my text-book." This is given as a reason for not attempting another edition of the text-book, and makes English speaking botanists all the more eager for a translation of the new work.

TWO THINGS STRUCK A NOVICE at Minneapolis rather unpleasantly in regard to the papers presented. The first was their careless preparation and still more careless presentation, half an hour being spent when five or ten minutes would have more than sufficed for a much clearer statement of all that was meant to be said. The second was the nature of the papers. Some were mere essays about well known facts, and most were observations about such trivial things that they could hardly be called profitable. While it may not be the object of the A. A. A. S. to cultivate a high degree of technicality, it should demand a certain amount of original work in the papers accepted.

TUCKAHOE, or Indian bread, is discussed at length by Prof. J. Howard Gore in the Smithsonian Report for 1881. Several things were eaten by the aborigines under this name, among them the underground portion of *Orontium aquaticum* and *Peltandra Virginica*, but it is now more generally applied to a fungus for which the name *Pachyma cocos* Fries is adopted.

LESTER F. WARD gives a systematic list and the distribution of 181 species of marsh and aquatic plants of the Northern United States, in signature 17 (vol. 3, p. 257) of the Bulletin of U. S. Fish Commission. Of this list 47 species printed in broad-face type are specially recommended by Dr. R. Hessel for carp ponds. It is noticeable that Dr. Hessel's list is wholly dicotyledonous, except *Naiadaceæ*, *Lemna*, *Pontederia*, and two rare plants, while both lists omit 8 out of the 11 kinds of plants named by Chas. W. Smiley, in answer to question 42—What plants are best for carp?—in signature 16, being such common plants as marsh marigold, water cress, white water-lilies, and Indian rice. Other less conspicuous omissions of flowering plants could be pointed out. No mention is made of *Chara* which in many western ponds and lakes is an important factor of the submerged vegetation. In some of the larger artificial lakes in the parks of Chicago it is so abundant as to require removal by dredging.

DR. MOHN, of the Norwegian North Sea expedition, in his description (as given in *Nature*) of Jan Mayen Island, gives the following list of the plants collected: *Saxifraga cæspitosa*, L., *S. nivalis*, L., *S. oppositifolia*, L., *S. rivularis*, L., *Ranunculus glacialis*, L., *Halianthus peplodes*, Fr., *Cerastium alpinum*, L., *Draba corymbosa*, R. Br., *Cochlearia officinalis*, L., *Oxyria digyna*, Campd., and *Catabrosa al-gida*, Fr.

DR. W. G. FARLOW summarizes the progress of botany during the year 1881 in an article of eighteen pages in the Smithsonian Report for that year lately issued. The first of these articles appeared in the preceding volume, embracing the years 1879 and 1880. They are excellent indices to the most important current literature in all departments of the science, and will be particularly valuable to ambitious workers who do not have access to a large scientific library.

THE LAST BULLETIN of the *Société Philomathique de Paris* contains an article by Roze on the male organs of *Azolla filiculoides*. The specimens were from the Botanic Garden of Bordeaux, and the first fruiting ones observed in France. The plants are monœcious, the conceptacles containing the male and female sporangia standing side by side. Each of the male or microsporangia contain six or seven cellular bodies or massulæ, in which the microspores are plunged, four in each. The massulæ contain a sufficient number of air cells, formed subsequently to the appearance of the microspores, to enable them to float on water. The microspores do not escape, but, as in *Salvinia*, protrude the antheridia, the two terminal cells of which bear the antherozoids. These are quite similar to the antherozoids of *Salvinia*. It is now proven that all the vascular cryptogams have spiral antherozoids with two or more cilia anteriorly—several in *Azolla*—and a protoplasmic vesicle containing starch granules attached posteriorly. The archegonia have an interesting device mentioned by M. Roze.

The canal of the archegonium is terminated at its summit by a delicate hyaline membrane forming a sort of funnel, which is covered on the inner surface by excessively fine filaments, doubtless for the purpose of facilitating the passage of the antherozoids into the archegonium. It will be remembered that the same end is attained in *Marsilia* by means of a mass of mucilage at the mouth of the archegonium which acts as a funnel.

PUCCINIA PROSERPINACÆ *Farlow* has been found very plentiful about Chicago, in so far confirming the opinion given in the last GAZETTE (ante p. 302) that it is widely distributed.

VOLKENS, by examining plants early in the morning, taking precautions against deception by dew, has found a large number of plants exuding water. He describes, in the "Proceedings" of the Royal Botanic Gardens of Berlin, the water pores of 150 species of plants. His observations were mostly made upon wild plants.

IN SOME REMARKS before the American Association at Minneapolis, Dr. Farlow mentioned the discovery this season of peculiar conidiospores on some *Peronosporæ* from Illinois. Instead of the usual branched aërial hyphæ bearing numerous small spores being produced, there were extremely short ones having a few spores of large size. The discovery is so recent that no opportunity has been given to study their development, and their office can not be conjectured.

THE WATER-NET, *Hydrodictyon utriculatum*, is a very common alga throughout Minnesota, Iowa and Illinois. It is to be found in shallow water, along the banks of rivers and small streams, and in pools having a constant supply of water kept warm by the sun, noticeably those in stone quarries. It is quickly recognized by the large, angular meshes reaching half a centimeter or more in diameter, seen best by raising the plant from the water. The old vesicular mother-cells, a centimeter or two long, still containing the young nets, look much like dead and bleached worms, as they lie undisturbed in the water.

THE LIFE HISTORY of *Penicillium*, common blue mould, will soon be issued from the botanical laboratory of the Johns Hopkins University.

AUGUST VOGEL, in Westermann's *Monatshefte* (translated in *Pop. Sci. Mo.* for Oct.) sums up what is known in regard to the pigments of plants, but unfortunately includes among them some things that we don't know. Light has a powerful, but not indispensable, influence in determining vegetable colors, and their intensity depends somewhat on the intensity of the light. Almost none of the flower pigments are available as dyes on account of their transitory nature. If Herr Vogel's translator interprets him correctly, the explanation given of the white color of flowers—"generally produced by a white cellular juice"—is wide of the mark. In Herr Vogel's opinion, tannin is an important factor in the generation of vegetable colors. He also believes that the form of the pigment exerts great influence on the shade of color.

THE CONTINUITY OF THE PROTOPLASM throughout the plant seems to be settled with tolerable certainty. W. Hillhouse has just added to our knowledge on the subject a fresh series of observations, conducted in Prof. Strasburger's

laboratory at Bonn. The most successful method is as follows: Very thin radial and tangential sections of the cortical tissue of various trees or shrubs were treated on the slide, first with dilute and then with concentrated sulphuric acid. After carefully removing the acid with a pipette, the sections were washed thoroughly with distilled water and covered with glycerine. By this treatment the cell-wall (and often the middle lamella) is destroyed, and the protoplasmic thread between adjacent cells distinctly seen. The material for this work is best gathered in January. Sections may be cut from fresh specimens or from those which have lain some days in absolute alcohol. In the first case, however, the razor must be flowing with absolute alcohol.

THE RECENT EXPERIMENTS of R. Hartig to determine the tissue through which water moves in the plant, and the causes of the movement, lead him to the following conclusions: There are two types of trees, in one of which (e. g. oak) the duramen is incapable of conducting water, and the other (e. g. birch) in which the whole of the wood is conductive. Tracheides, and at times true vessels, are the chief organs for the transference of sap. The absorption of water by the roots is due to the osmotic forces in its cells, especially those of the root-hairs. The cause of the ascent of water in wood is the difference in density of the air in the conducting organs, and the pressure of the atmosphere exercises little or no influence on it.

ARTICLES IN JOURNALS.

"ANALYST, AN."—A Granule of Starch, *Pop. Sci. Mo.* 23. 687.

BAKER, J. G.—A synopsis of the genus *Selaginella* (5 new species, all from Central and S. Am.), *Jour. Bot.* 21. 210: Ferns collected by the Rev. Hanning in E. Tropical Africa (two new species, an *Asplenium* and a *Notochlena*), l. c. 245: A study of the survival of the fittest, l. c. 271.

BOSWELL, H.—Two recent additions to the British Mosses (one being *Sphagnum Torreyanum*, *Sulliv.*), *Jour. Bot.* 21. 233.

BUCKLEY, S. B.—Some new Texan plants (4 species, all shrubs or small trees, one being a *Quercus*), *Torr. Bull.* 10. 90.

CHRISTY, ROBERT MILLER and HENRY CORDER.—*Arum maculatum* and its cross-fertilization, *Jour. Bot.* 21. 225 and 262.

CORDER, HENRY.—See under "CHRISTY" above.

ELLIS, J. B. and B. M. EVERHART.—New species of Fungi (7 species), *Torr. Bull.* 10. 89.

EVERHART, B. M.—See under "ELLIS" above.

GREENE, EDWARD LEE.—New Western Composite (9 species) *Torr. Bull.* 10. 86.

GROVE, W. B.—A new *Puccinia*, *Jour. Bot.* 21. 274.

HANCE, H. F.—*Orchidaceae* quatuor novas Sinenses, *Jour. Bot.* 21. 231: *Heptadenum Filicium* Novarum Sinicarum (7 species), l. c. 267: *Disporopsis*, genus novum *Liliacearum* (from China), l. c. 278.

HEMSLEY, W. BOTTING.—Bermuda plants in the Sloane collection, British Museum, (with plate and description of a new *Carex*) *Jour. Bot.* 21. 257.

HILL, E. J.—Potamogetons in W. New York, *Torr. Bull.* 10. 92: Means of plant dispersion (continued from August number), *Am. Nat.* 17. 1028.

KIDD, H. W.—Notes on fasciated stems (with cut), *Sci. Gossip*, No. 225. 196.

PIM, GREENWOOD.—On *Alliospora*, a supposed new genus of *Dematiacei*, *Jour. Bot.* 21. 334.

ROZE, E.—Male organ of *Azolla filiculoides* Lam., *Bull. Soc. Philom. de Paris*, Ser. 7. 7. 133.

SCHUBERT, F. LAMSON.—Notes on *Spartina* (with plate), *Torr. Bull.* 10. 85.

SEDGWICK, W. T.—Symbiosis and Vegetating Animals (Review of controversy between Brandt, Geddes, Lankester et al.), *Pop. Sci. Mo.* 23. 811.

TRELEAVE, W.—Notice of Farlow's notes on Ellis' N. Am. Fungi, *Science*, 2. 410.

VOGEL, AUGUST.—The colors of flowers (considered chemically), *Pop. Sci. Mo.* 23. 837.

WARD, LESTER F.—Marsh and aquatic plants of the Northern U. S., many of which are suitable for carp ponds, *Bull. U. S. Fish Com.* 3. 257.